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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,492	03/12/2001	Shoichi Takasuka	10873.687US01	1253
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MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER BATTAGLIA, MICHAEL V	
			ART UNIT 2652	PAPER NUMBER
			DATE MAILED: 12/11/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,492

Applicant(s)

TAKASUKA ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 3 is objected to because of the following informality: On line 1 of claim 3, the examiner suggests replacing "semiconductor laser" with -optical head-. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 15-17, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujita (US 5,886,964).

In regard to claim 1, Fujita discloses an optical head device, comprising: a plurality of semiconductor lasers (Fig. 1, elements 16 and 17); and optical elements disposed on an optical path between the plurality of semiconductor lasers and an optical information recording medium

(Fig. 1, elements 1 and 20-21), wherein the plurality of semiconductor lasers are disposed so that beam spots, formed on the optical information recording medium, of light beams emitted from the plurality of semiconductor lasers are aligned substantially parallel to a pit-row direction or a guide groove direction in the optical information recording medium (Figs. 3 and 7 and Col. 10, lines 27-29).

In regard to claim 2, Fujita discloses that the optical head device further comprises a photodetector where returning light from the optical information recording medium enters (Fig. 1, element 25).

In regard to claim 3, Fujita discloses that the plurality of semiconductor lasers have different emission wavelengths from one another (Col. 15, lines 35-38).

In regard to claim 15, Fujita discloses that the optical head device further comprises a plurality of photodetectors where returning light from the optical information recording medium enters, wherein the optical elements and the plurality of photodetectors are disposed so that part of returning light from the optical information recording medium, which originates in each of the light beams emitted from the plurality of semiconductor lasers, enters one of the plurality of photodetectors at a time (Fig. 1, element 25 and Fig. 5, elements 25 and 44-45).

In regard to claim 16, Fujita discloses that each of the plurality of photodetectors includes a light-receiving region divided into two parts in a direction that is substantially parallel to or substantially perpendicular to the pit-row direction or the guide groove direction in the optical information recording medium, part of returning light from the optical information recording medium being detected therein irrespective of which of the plurality of semiconductor lasers emits light beams (Fig. 1, element 25 and Fig. 5, elements 25 and 44-45).

In regard to claim 17, Fujita discloses that a linear diffraction grating is included as one of the optical elements, and returning light from the optical information recording medium that originates in \pm 1st-order diffracted light formed by the diffraction grating is detected in the light-receiving region (Fig. 5, element 54).

In regard to claim 22, Fujita discloses an optical recording and reproducing apparatus comprising an optical head device, the optical head device comprising a plurality of semiconductor lasers with different emission wavelengths from one another (Fig. 1, elements 16-17 and Col. 2, lines 24-26); and optical elements disposed on an optical path between the plurality of semiconductor lasers and an optical information recording medium (Fig. 1, elements 15 and 20-21), wherein the plurality of semiconductor lasers are disposed so that beam spots, formed on the optical information recording medium, of light beams emitted from the plurality of semiconductor lasers are aligned substantially parallel to a pit-row direction or a guide groove direction in the optical information recording medium (Fig. 3 and Col. 10, lines 27-29).

4. Claims 1, 2, 6, 12, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando (US 5,018,127).

In regard to claim 1, Ando discloses an optical head device, comprising: a plurality of semiconductor lasers (Figs. 2, 7, and 8, elements 70-1 and 70-2); and optical elements disposed on an optical path between the plurality of semiconductor lasers and an optical information recording medium (Figs. 2 and 7, elements 18 and 72), wherein the plurality of semiconductor lasers are disposed so that beam spots, formed on the optical information recording medium, of light beams emitted from the plurality of semiconductor lasers are aligned substantially parallel to a pit-row direction or a guide groove direction in the optical information recording medium (Fig. 6).

In regard to claim 2, Ando discloses that the optical head device further comprises a photodetector where returning light from the optical information recording medium enters (Figs. 2 and 4, element 74).

In regard to claim 6, Ando discloses that one of the optical elements is a diffraction grating (Fig. 11, element 99).

In regard to claim 12, Ando discloses that the diffraction grating is sawtooth-shaped (Figs. 2 and 4, element 74).

In regard to claim 15, Ando discloses that the optical head device further comprises a plurality of photodetectors where returning light from the optical information recording medium enters, wherein the optical elements and the plurality of photodetectors are disposed so that part of returning light from the optical information recording medium, which originates in each of the light beams emitted from the plurality of semiconductor lasers, enters one of the plurality of photodetectors at a time (Figs. 2 and 4, elements 82A-C and 83A-B).

5. Claims 1-11 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohyama (US 6,512,608).

In regard to claim 1, Ohyama discloses an optical head device, comprising: a plurality of semiconductor lasers (Figs. 14-15, elements 25 and 27); and optical elements disposed on an optical path between the plurality of semiconductor lasers and an optical information recording medium (Fig. 14, element 33 and the lens in between elements 33 and 21), wherein the plurality of semiconductor lasers are disposed so that beam spots, formed on the optical information recording medium, of light beams emitted from the plurality of semiconductor lasers are aligned substantially parallel to a pit-row direction or a guide groove direction in the optical information recording medium (Fig. 14).

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In regard to claim 2, Ohyama discloses that the optical head device further comprises a photodetector where returning light from the optical information recording medium enters (Figs. 15 and 17, elements 35, 37, 43, 45, 47, 49, 55-58, 65, 67, 69, and 71).

In regard to claim 3, Ohyama discloses that the plurality of semiconductor lasers have different emission wavelengths from one another (Col. 19, lines 54-56).

In regard to claim 4, Ohyama discloses that the two semiconductor lasers are provided and have different emission wavelengths, each of which is selected from a group consisting of ranges of: 630 nm to 690 nm, 780 nm to 820 nm, and 200 nm to 450 nm (Col. 8, lines 23-28 and Col. 19, lines 54-56).

In regard to claim 5, Ohyama discloses that the beam emission points of the plurality of semiconductor lasers are aligned on a substantially straight line and are spaced at 150 μm or less (Col. 19, lines 56-60).

In regard to claim 6, Ohyama discloses that one of the optical elements is a diffraction grating (Figs. 14-16, element 33).

In regard to claim 7, Ohyama discloses that the diffraction grating is divided into $2n$ (where n indicates a natural number) diffraction regions with different grating periods from one another (Figs. 14-16, elements 29, 31, and 33).

In regard to claim 8, Ohyama discloses that the dividing lines that divide the diffraction regions are positioned substantially parallel to or substantially perpendicular to the pit-row direction or the guide groove direction in the optical information recording medium (Figs. 14-16, elements 29, 31, and 33).

In regard to claim 9, Ohyama discloses that one of the dividing lines that divide the diffraction regions divides returning light from the optical information recording medium into two substantially equal parts (Fig. 16, X-axis).

In regard to claim 10, Ohyama discloses that the diffraction grating is divided into $2n$ (where n indicates a natural number) diffraction regions with different grating pitch directions from one another (Figs. 14-16, elements 29, 31, and 33).

In regard to claim 11, Ohyama discloses that the dividing lines that divide the diffraction regions are positioned substantially parallel to or substantially perpendicular to the pit-row direction or the guide groove direction in the optical information recording medium (Figs. 14-16, elements 29, 31, and 33).

In regard to claim 19, Ohyama discloses that the optical head device further comprises a plurality of photodetectors where returning light from the optical information recording medium enters, wherein the plurality of semiconductor lasers and at least part of the plurality of photodetectors are integrated on one substrate (Figs. 14-15, element 39).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohyama in view of Abe et al (hereafter Abe) (US 6,084,843).

Ohyama discloses optical head with a diffraction grating as claimed in claim 6. Ohyama does not disclose that the diffraction grating has grooves whose depths vary in a step-wise manner in constant period.

Abe discloses a diffraction grating with grooves whose depths vary in a step-wise manner in constant period (Figs. 9-10, 12A, and 12B, element 25). Abe teaches that the optical system using the diffraction grating with grooves whose depths vary in a step-wise manner in constant period as shown in Fig. 14 will cancel coma and spherical aberration while allowing the optical head device to be compatible with optical information recording mediums of different substrate thicknesses and recording densities (Col. 8, lines 4-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a diffraction grating with grooves whose depths vary in a step-wise manner in constant period in the optical head device of Ohyama as suggested by Abe, the motivation being to cancel coma and spherical aberration while allowing the optical head device to be compatible with optical information recording mediums of different substrate thicknesses and recording densities.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohyama in view of Uchizaki et al (hereafter Uchizaki) (US 6,646,947).

Ohyama discloses the optical head device as claimed in claim 1 having a plurality of semiconductor lasers. Ohyama does not disclose that the plurality of semiconductor lasers are disposed on a heat sink made of metal or a semiconductor metal.

Uchizaki discloses a plurality of semiconductor lasers are disposed on a heat sink made of metal or a semiconductor metal (Fig. 5, elements 31 and 41 and Col. 14, lines 14-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the plurality of semiconductor lasers of Ohyama on the heat sink made of metal or a semiconductor metal of Uchizuki, the motivation being to dissipate heat produced in the plurality of semiconductor lasers.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando, Fujita, or Ohyama as applied to claim 1 above, in view of Ootaki et al (hereafter Ootaki) (US 5,734,637).

Ando, Fujita, and Ohyama each disclose an optical head device as claimed in claim 1. Ando, Fujita, and Ohyama do not disclose that the optical head device further comprises a rim-intensity correction means.

Ootaki discloses a rim-intensity correction means and teaches that an enhanced rim intensity allows for a reduced spot diameter and certain read out from a high density optical information recording medium (Col. 3, lines 48-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a rim intensity correction means in the optical head device of Ando, Fujita, or Ohyama as suggested by Ootaki, the motivation being to allow for a reduced spot diameter and certain read out from a high density optical information recording medium.

9. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohyama in view of Kajiyama et al (hereafter Kajiyama) (US 6,552,990).

In regard to claim 20, Ohyama discloses the optical head device as claimed in claim 2 having an objective lens, a plurality of semiconductor lasers, optical elements, and a photodetector. Ohyama does not disclose that the objective lens is fixed to a package or that the plurality of semiconductor lasers, the optical elements, and the photodetector are disposed in the package.

Kajiyama discloses an optical head device wherein an objective lens (Figs. 51A and 51B, element 7) is fixed to a package (Figs. 51A and 51B, element 42) and that the plurality of semiconductor lasers (Figs. 51A and 51B, elements 1a and 1b), optical elements (Figs. 51A and 51B, elements 2-4 and 40-41), and a photodetector (Figs. 51A and 51B, element 8) are disposed in the package (Figs. 51A and 51B).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the plurality of semiconductor lasers, the optical elements, and the photodetector of Ohyama into the package of Kajiyama and to fix the objective lens to the package as suggested by Kajiyama, the motivation being to allow the elements of the optical head device to move back and forth in the radial direction while maintaining the spatial relation of the elements.

In regard to claim 21, Kajiyama discloses an optical head device further comprising a supporter (Figs. 51A and 51B, element 43), wherein the package is connected to the supporter movably with respect thereto (Figs. 51A and 51B).

Citation of Relevant Prior Art

10. Kanda (US 4,712,206) (Figs. 1-2 and Col. 5) and Ueyanagi et al (US 6,154,326) (Figs. 15-16) disclose an optical head device, comprising: a plurality of semiconductor lasers and optical elements disposed on an optical path between the plurality of semiconductor lasers; and an optical information recording medium, wherein the plurality of semiconductor lasers are disposed so that beam spots, formed on the optical information recording medium, of light beams emitted from the plurality of semiconductor lasers are aligned substantially parallel to a pit-row direction or a guide groove direction in the optical information recording medium. Katsuma (US 6,166,854) discloses an optical head with a plurality of lasers and a diffraction grating with grooves whose depths vary in

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a step-wise manner in constant period. Ohyama (EP 0 887 898 A1) and Maruyama et al (US 6,487,161) disclose an objective lens fixed to a package that is moveably connected to a support.

Conclusion

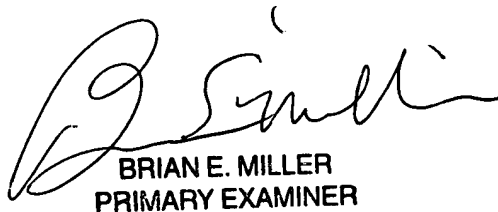
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Michael Battaglia



BRIAN E. MILLER
PRIMARY EXAMINER